

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

- 1 1. (Currently Amended) A method for detecting a crossing of a boundary, the method
2 comprising:
 - 3 identifying receiving a representation of a boundary within a coordinate system, wherein
4 the boundary is defined by at least one rectangle;
 - 5 identifying receiving a set of coordinates associated with a ~~particular~~ location of a
6 monitored device;
 - 7 rotating, by a processor, the ~~identified received~~ set of coordinates by an angle between a
8 selected side of a particular rectangle of the boundary and an axis of the coordinate system; and
 - 9 comparing, by the processor, the rotated set of coordinates to a rotated rectangle to
10 determine whether the location of the monitored device is located within the particular rectangle,
11 wherein the particular rectangle is rotated by the angle to form the rotated rectangle such that the
12 selected side of the rotated rectangle is oriented parallel to the axis of the coordinate system.
- 1 2. (Original) The method of claim 1 wherein a boundary crossing is detected if the location of
2 the monitored device is located within the particular rectangle.
- 1 3. (Original) The method of claim 2 further comprising initiating a pre-selected response if a
2 boundary crossing is detected.
- 1 4. (Original) The method of claim 3 wherein the pre-selected response includes
2 determining a new jurisdiction entered as a result of the boundary crossing;
3 loading a boundary for the new jurisdiction; and
4 detecting a crossing of the new jurisdiction boundary.

1 5. (Original) The method of claim 3 wherein the pre-selected response includes gathering
2 information related to the boundary crossing.

1 6. (Original) The method of claim 5 wherein the monitored device comprises a vehicle and the
2 gathered information includes at least one of a distance traveled and an amount of fuel used by
3 the vehicle.

1 7. (Original) The method of claim 5 wherein the gathered information is sent over a wireless
2 interface to a central server.

1 8. (Original) The method of claim 5 wherein the gathered information is stored on the device
2 being monitored.

1 9. (Original) The method of claim 1 wherein the boundary is defined by a collection of
2 overlapping rectangles, the method further comprising selecting a different rectangle of the
3 collection of overlapping rectangles if the location of the monitored device is not located within
4 the particular rectangle.

1 10. (Currently Amended) The method of claim 9 further comprising:

2 ~~rotating-storing information representing the different rectangle rotated by an angle~~
3 between a selected side of the different rectangle and an axis of the coordinate system such that
4 the selected side of the rotated different rectangle is oriented parallel to the axis of the coordinate
5 system;

6 ~~rotating the received identified set of coordinates by the angle between the selected side~~
7 of the different rectangle and the axis of the coordinate system to generate a second set of rotated
8 coordinates; and

9 ~~comparing the second set of rotated coordinates to the rotated different rectangle to~~
10 determine whether the location of the monitored device is located within the different rectangle.

1 11. (Original) The method of claim 1 wherein:

2 the particular rectangle is defined by coordinates of two opposite corners of the rectangle;

3 the rotated rectangle is generated by rotating the coordinates of the two opposite corners

4 of the rectangle by the angle; and

5 comparing the rotated set of coordinates to the rotated rectangle comprises comparing the

6 rotated set of coordinates to the rotated coordinates of the two opposite corners of the rectangle.

1 12. (Currently Amended) The method of claim 1 wherein the defined boundary represents a

2 boundary border between a first jurisdiction and a second adjacent jurisdiction.

1 13. (Original) The method of claim 1 wherein the defined boundary is stored as a file by the

2 monitored device.

1 14. (Original) The method of claim 1 wherein the particular rectangle has an associated indicator

2 of a jurisdiction that is occupied if the location of the monitored device is located within the

3 particular rectangle, the method further comprising loading a boundary for the jurisdiction that is

4 occupied if the location of the monitored device lies within the particular rectangle.

1 15. (Original) The method of claim 1 wherein defining the boundary, determining the angle, and

2 rotating the particular rectangle are performed by a central server.

1 16. (Currently Amended) The method of claim 1 wherein ~~identifying-receiving~~ the set of
2 coordinates associated with ~~a particular~~ the location, rotating the ~~received~~ set of ~~identified~~
3 coordinates, and comparing the rotated set of coordinates to the rotated rectangle are performed
4 by the monitored device.

1 17. (Currently Amended) A method for detecting a crossing of a ~~boundary~~border between
2 different jurisdictions, the method comprising:

3 retrieving data defining at least one rectangle that represents the border between the
4 different jurisdictions~~rectangles associated with a boundary~~;
5 ~~identifying-receiving information relating to~~ a current location of a monitored device; and
6 ~~comparing, by a processor,~~ the current location with the ~~rectangles~~at least one rectangle
7 using the data defining the ~~rectangles~~at least one rectangle, wherein a determination that the
8 current location is located within [[a]]the at least one rectangle indicates a ~~boundary~~border
9 crossing by the monitored device between the different jurisdictions.

1 18. (Currently Amended) The method of claim 17 wherein retrieving data defining ~~rectangles~~
2 ~~associated with the boundary, identifying the at least one rectangle receiving information relating~~
3 ~~to~~ the current location of the monitored device, and comparing the current location to the
4 ~~rectangles~~at least one rectangle are performed by the monitored device.

1 19. (Original) The method of claim 17 wherein the monitored device comprises a vehicle.

1 20. (Currently Amended) The method of claim 17 further comprising determining a distance
2 covered by the monitored device within ~~a jurisdiction defined by one of the jurisdictions having~~
3 the boundary~~border~~.

1 21. (Currently Amended) The method of claim 17 further comprising determining an amount of
2 fuel used by the monitored device within ~~a jurisdiction defined by a boundary~~one of the
3 jurisdictions having the border.

1 22. (Currently Amended) The method of claim 17 further comprising determining statistics
2 related to ~~a jurisdiction defined by the boundary one of the jurisdictions having the border.~~

1 23. (Currently Amended) The method of claim 17 further comprising retrieving adjacent
2 jurisdiction boundary data when ~~a boundary the border~~ crossing is indicated, with the adjacent
3 jurisdiction boundary data defining one or more rectangles associated with ~~a boundary another~~
4 border of an adjacent jurisdiction that is occupied by the monitored device after [[a]]~~the~~
5 boundary crossing.

1 24. (Currently Amended) The method of claim [[19]]17 wherein the ~~rectangles correspond at~~
2 least one rectangle corresponds to the ~~boundary~~border of a current jurisdiction.

1 25. (Currently Amended) The method of claim 24 wherein [[the]]rectangles defining ~~the~~
2 ~~boundaries borders~~ of adjacent jurisdictions do not overlap the ~~rectangles at least one rectangle~~
3 corresponding to the ~~boundary~~border of the current jurisdiction.

1 26. (Currently Amended) The method of claim 17 wherein the data defining ~~rectangles the at~~
2 least one rectangle includes, for each rectangle, an angle of rotation for the respective rectangle
3 and rotated coordinates of two opposite corners of the respective rectangle, with the rotated
4 coordinates corresponding to coordinates of the respective rectangle that have been rotated by
5 the angle of rotation.

1 27. (Currently Amended) The method of claim 17 wherein comparing the current location with
2 the rectangles-at least one rectangle comprises:

3 ~~selecting a rectangle from the data defining rectangles;~~

4 rotating a set of coordinates defining the current location by an angle of rotation associated
5 with the selected-at least one rectangle; and

6 comparing the rotated coordinates defining the current location to rotated coordinates of two
7 opposite corners of the selected-at least one rectangle.

1 28.-35. (Cancelled)

1 36. (Currently Amended) A method for detecting movement across a boundary, the method
2 comprising:

3 storing at least two sets of rotated coordinates associated with a predetermined
4 rectangular boundary segment, the at least two sets of rotated coordinates corresponding to at
5 least two sets of original coordinates that define the predetermined rectangular boundary segment
6 in a coordinate system, wherein each [[set]] of the sets of original coordinates is rotated by an
7 angle of rotation to generate the corresponding set of rotated coordinates prior to storing each set
8 of rotated coordinates, and the at least two sets of rotated coordinates define a rotated boundary
9 segment having sides that are parallel to an axis of the coordinate system;

10 storing the angle of rotation, wherein the angle of rotation is defined by an angle between
11 the axis one of the axes of the coordinate system and a side of the predetermined rectangular
12 boundary segment;

13 identifying a location of a monitored device;

14 rotating, by the monitored device, a set of coordinates representing the identified location
15 of the monitored device by the angle of rotation to generate a rotated set of location coordinates;
16 and

17 comparing, by the monitored device, the rotated set of location coordinates with the at
18 least two sets of rotated coordinates to determine a position of the monitored device relative to
19 the predetermined rectangular boundary segment.

1 37. (Original) The method of claim 36 wherein each set of coordinates identifies a longitudinal
2 and a latitudinal position.

1 38. (Original) The method of claim 36 further comprising determining whether the boundary has
2 been crossed based on the position of the monitored device relative to the predetermined
3 rectangular boundary segment.

1 39. (Currently Amended) The method of claim 36 further comprising:
2 storing rotated coordinates associated with an additional rectangular boundary segment;
3 storing an angle of rotation for the additional rectangular boundary segment; and
4 responsive to a determination that the location of the monitored device is not located
5 within the predetermined rectangular boundary segment:
6 rotating the set of coordinates representing the identified location of the monitored device
7 by the angle of rotation for the additional rectangular boundary to generate a second rotated set
8 of location coordinates; and
9 comparing the second rotated set of location coordinates with the rotated coordinates
10 associated with the additional rectangular boundary to determine whether the location of the
11 monitored device is located within the adjacent rectangular boundary segment.

1 40. (Original) The method of claim 36 further comprising initiating a pre-selected response if the
2 location of the monitored device is located within the predetermined rectangular boundary
3 segment.

1 41. (New) The method of claim 36, wherein the predetermined rectangular boundary segment
2 represents a border between different jurisdictions.